

**MECHATRONICS BOOK SERIES
SELECTED PAPERS FROM
ICOM'01, ICOM'05 AND ICOM'08**

Editors

Asan G. A. Muthalif

Amir A. Shafie

Momoh J.E. Salami

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HARDWARE IMPLEMENTATION OF INTELLIGENT BRAKING SYSTEM

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ABSTRACT

Intelligent braking system has a lot of potential applications especially in developed countries where research on smart vehicle and intelligent highway are receiving ample attention. The system when integrated with other subsystems like automatic traction control system, intelligent throttle system, and auto cruise system, etc will result in smart vehicle maneuver. The driver at the end of the day will become the passenger, safety accorded the highest priority and the journey will be optimized in term of time duration, cost, efficiency and comfortability. The impact of such design and development will cater for the need of contemporary society that aspires quality drive as well as to accommodate the advancement of technology especially in the area of smart sensor and actuator. The emergence of digital signal processor enhances the capacity and features of universal microcontroller. This paper introduces the use of TI DSP, TMS320LF2407 as an engine of the system. The overall system is designed so that the value of inter-vehicle distance from infrared laser sensor and speed of follower car from speedometer are fed into the DSP for processing, resulting in the DSP issuing commands to actuator to function appropriately.

Keywords: Smart vehicle, hardware implementation, DSP

1. INTRODUCTION

Intelligent braking system has found a lot of potential applications in countries like United States, Japan, Germany, France etc. Researches on smart vehicle are dated back to early 70's. Despite that, it is not until early '90 where it starts to be carefully planned and clearly defined after gaining support from governments and private agencies. The result is a comprehensive, long-term project called Intelligent Vehicle Highway System or later been called Intelligent Transportation System. The system when integrated with other subsystems like automatic traction control system, intelligent throttle system, and auto cruise system etc will result in a smart vehicle. The driver at the end of the day will become the passenger, safety accorded the highest priority and the journey will be optimized in term of time duration, cost, efficiency and comfortability. Currently, the need to have driver to put control over certain functions has become indispensable. This is to alleviate certain problems of liability to some degree when accident occurs. It seems logical that the driver will